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10/726,361	12/03/2003	Andrew Jay Skoog	13DV-13673 (07783-0087)	7152

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EXAMINER	
TUROCY, DAVID P	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,361	SKOOG ET AL.	
	Examiner	Art Unit	
	David Turocy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/5/2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 3/9/2005 have been fully considered but they are not persuasive.

3. The examiner notes the filing of the terminal disclaimer to overcome the obvious-type double patenting rejection. The terminal disclaimer filed on 6/9/2005 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of application 10/726357 has been reviewed and is accepted. The terminal disclaimer has been recorded. The examiner notes however, the supplied terminal disclaimer does not include U.S. Patent No. 6720034 by Skoog et al. and therefore the obvious type double patenting rejection to these claims has not been withdrawn.

The applicant has argued against the Nagaraj reference stating the present invention does not include a barrier coating, which is deposited by the techniques as

disclosed at column 4, lines 15-16 and one would be motivated to deposit the reflective coating on the substrate by such methods. The examiner respectfully disagrees. Nagaraj explicitly discloses any conventional methods for depositing the reflective coating and "conventional methods" is not limited to methods disclosed for another materially different coating. The examiner notes the claim only requires the presence of the steps listed and does not limit the claim to exclude any other steps, which may include a thermal barrier coating as taught by Nagaraj or any other process steps.

The applicant has argued against the Klabunde reference stating that it does not teach the use of a palladium, platinum, and/or gold coating as a "reflective coating". Klabunde is utilized here only to show a known method of applying a metal coating on a substrate includes forming a dispersion of metal particles and organic carrier, spraying the dispersion to the substrate, and finally heating/firing to form the metal layer (Col 3, lines 35-65; Col 6, lines 30-54).

The applicant argues against the Kirk-Othmer publication stating that the context of the Kirk-Othmer reference is directed toward internal workings of gas turbine engine and fails to teach heat-reflective coatings can be applied by spraying techniques. The examiner respectfully disagrees. The Kirk-Othmer publication, as a whole, is directed to known and conventional spraying techniques and discloses, on page 688 in Table 2, air-atomizing sprays is a known method of spraying coatings. Therefore, the Kirk-Othmer publication, reasonably suggests to one of ordinary skill in the art to utilize air-assisted spraying to coat a substrate. *Nagaraj discloses applying a noble metal coating onto a gas turbine substrate by any conventional method, Klabunde discloses applying*

a noble metal by using a dispersion of a noble metal and organic by spraying and Kirk-Othmer discloses air-assisted spraying is conventionally utilized in coating a substrate. Therefore, it would have been obvious to one of ordinary skill at the time of the invention was made to apply the heat reflective layer of Nagaraj using conventional spraying as taught by Klabunde and specifically the conventional air-assisted spraying as disclosed by Kirk-Othmer because of the expectation of successfully applying the heat reflective layer coating on substrate.

The applicant has argued against the Kirk-Othmer reference stating that it does not teach any method for coating the surface of a gas turbine engine. While the examiner agrees Kirk-Othmer does not explicitly state coating the surface of a gas turbine engine, *Nagaraj teaches coating, by a conventional method, a noble metal onto the surface of the gas turbine engine, Klabunde discloses noble metals are conventionally spraying onto surfaces to coat them, and Kirk-Othmer teaches conventional methods of coating substrates includes air-assisted spraying.* Therefore the examiner is not asserting that Kirk-Othmer directly teaches coating a gas turbine engine, only that they teach conventional spray coating methods and one of ordinary skill in the art would reasonably expect success in coating a turbine blade with an air-assisted process.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have

suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The applicant has argued against the Driver reference stating that it teaches away from the present invention. The examiner respectfully disagrees. While Driver may disclose coating using different conditions, Driver is only utilized here as a showing that cobalt-based or titanium based alloys are known alternatives to nickel-based alloys for gas turbine engines.

The applicant has argued against the Eppler reference stating that it teaches away from the present invention because it teaches of air-assisted spraying within an enclosure. The examiner respectfully disagrees. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). While paragraph [0015] of the specification discloses air-assisted spraying is not limited to certain considerations such as special chambers, this limitation is not required by claim 14, therefore "air-assisted spraying" is given its broadest reasonable interpretation. The added limitation to claim 1 only modifies the method of applying the reflective-coating mixture and therefore is not limiting to the application of the ceramic barrier coating mixture.

The applicant has argued against the Demaray reference stating that it teaches away from the present invention because it teaches different coatings as well as different methods of application. The examiner agrees that the ceramic coating of Demaray is a thermal barrier coating rather then a reflective coating, however, Demaray

suggests, to one of ordinary skill in the art, to polish the substrate prior to coating achieves a desired surface roughness and one skilled in the art would recognize that this roughening enhances adhesion of the coating.

The applicant has argued against the Rigney reference stating the reference does not teach a reflective coating and therefore is not properly combinable. The examiner agrees that the ceramic coating of Rigney is a thermal barrier coating rather then a reflective coating, however, Rigney suggests, to one of ordinary skill in the art, to oxidize the substrate prior to coating enhances the bonding between the superalloy and the subsequent coating.

The applicant has argued against the Tecle reference stating that it fails to disclose a method of applying a solvent including an encapsulant and fluxing agents. While the examiner agrees Tecle does not explicitly teach a method of application, Tecle reasonably suggests to one of ordinary skill in the art to provide a metallic particle/organic carrier solution with encapsulants to decrease the large amount of organic material required as well as fluxing agents to enhance the promotion of the coating to the substrate.

The applicant has argued against the Akechi reference stating that it teaches a thick paste and not therefore cannot be applied by the coating techniques of the present invention. The examiner only utilizes Akechi as a showing that it is known in the art to provide a glass filler in a noble metal/organic carrier dispersion.

In response to applicant's argument that Akechi is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if

not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both the prior art and the present claims are directed to applying a metal/organic coating onto a substrate.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-2, 4, 6-18 and 24-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6720034. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claim 1 of the present invention, supplying a metallic component for a gas turbine engine, is generic to, i.e. fully encompasses, Claim 1 of the existing patent. The examiner notes the limitation to the claims requiring

the method be capable of being applied at a temperature and pressure, however, it is the examiners position that the application methods claimed US Patent 6720034 are "capable" of being applied at the claimed conditions, where such a limitation does not positively recite the temperature and pressure during application. In addition claims 2-16 of the existing patent teaches all the limitations of Claims 2, 4, 6-18 and 24-26 of the present invention.

6. Claims 3 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U. S. Patent No. 6720034 in view of GB Patent 2060436. Claims 1-16 of U. S. Patent No. 6720034 teach all the limitations set forth by claims 3 and 5 of the present invention, except teaching of supplying a component comprising cobalt-base superalloy or titanium alloy. However, GB Patent 2060436 teaches of an application of ceramic barrier layer onto a turbine blade comprising of nickel and cobalt superalloys, stainless steel or titanium alloy. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify U. S. Patent No. 6720034 to use the cobalt-base superalloy or titanium alloy suggested by GB Patent 2060436 to provide a desirable ceramic coating to a metallic substrate because U. S. Patent No. 6720034 teaches of applying a ceramic to a nickel-based superalloy and GB Patent 2060436 teaches cobalt-base superalloy or titanium alloy are known in the art to be variants to nickel-based alloy.

Such a modification to claims 1-16 of U. S. Patent No. 6720034 would have been obvious to one of ordinary skill in the art and thus Claims 3 and 5 of the present invention are obvious variants to claims 1-16 of U. S. Patent No. 6720034.

Claim Objections

7. Claims 1-23 are objected to because of the following informalities:

Claim 1 includes the limitations "applying the coating mixture", which should more appropriately read "applying the reflective-coating mixture".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-2, 4, 6-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer.

Nagaraj et al. teaches a method of applying a heat reflecting on a nickel-based superalloy component of a gas turbine engine by applying a ceramic thermal barrier coating onto the substrate by plasma spraying and then applying the heat reflecting layer of gold or platinum on the thermal barrier coating (Col. 3, line 26-Col. 4, line 24). It is the examiners position that the ceramic thermal barrier coating dries prior to application of the heat reflective coating. Nagaraj et al. does not teach the claimed method of applying the heat-reflecting layer. However, Nagaraj et al. teaches that the heat-reflecting layer can be applied by any conventional deposition technique (Col. 3, lines 49-57). Klabunde teaches forming a reflective metal layer, such as a gold or platinum layer, on a substrate by forming a dispersion of metal particles and organic solvent carrier, applying the dispersion to a substrate and then heating/firing to form the metal layer, where the dispersion can be applied by spraying (Col. 3, lines 35-65; Col. 6, lines 30-54).

Nagaraj et al. in view of Klabunde does not teach the spraying is an air assisted spraying technique. However, using air to atomize and project a spray for coating a substrate is well established in the art, as shown by Kirk-Othmer. (see page 672, Table

1, page 688, Table 2), and hence would have been an obvious method of spraying the heat-reflective coating because of the expectation of successfully forming the reflective layer. In addition, it is the examiners position that the application method taught by Kirk-Othmer are "capable" of being applied at the claimed conditions and such a recitation does not require such temperature and pressure during the application of the coating mixture.

It would have been obvious to one of ordinary skill at the time of the invention was made to apply the heat reflective layer of Nagaraj using conventional spraying as taught by Klabunde and specifically the conventional air-assisted spraying as disclosed by Kirk-Othmer because of the expectation of successfully applying the heat reflective layer on a gas turbine engine.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach the claimed amount of reflective coating mixture and thermal barrier coating applied to the substrate. However, it is the examiners position that the amount of these coatings applied to the turbine component are known result effective variables, as not enough of these coatings applied to the component would not provide the desired heat reflectance and thermal barrier properties, and too much would not offer additional benefits of increased heat reflectance and thermal properties.

Therefore, it would have been obvious to one skilled in the art at the time of the invention was made to determine an optimal coating amount for the heat reflective layer and the thermal barrier layer, in the process of Nagaraj et al. in view of Klabunde and

further in view of Kirk-Othmer, through routine experimentation, to provide the desired heat reflecting and thermal barrier properties for the turbine component.

11. Claim 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 1 above, and further in view of Driver.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach supplying a metallic gas turbine component comprising cobalt-base superalloy or titanium alloy. Nagaraj et al. teaches of a coating on a nickel-base superalloy, but suggests that other suitable high temperature materials could also be used (Column 3, lines 31-32). Driver teaches of an application of ceramic onto a turbine blade, where the coating is suitable for substrates of nickel and cobalt superalloys, stainless steel and titanium alloy.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer to use the cobalt-based superalloy or titanium alloy suggested by Driver to provide a desirable ceramic coating to a metallic substrate because Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer teaches of applying a ceramic to a nickel-based superalloy or other high temperature materials and Driver teaches cobalt-base superalloy or titanium alloy are known in the art to be alternatives to nickel-based alloy.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 9 above, and further in view of Vakil.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach the claimed thermal barrier layer material containing lanthanum or cerium. Vakil teaches a nickel-based superalloy gas turbine engine component having a ceramic thermal barrier coating, where the coating can include cerium (Col. 6, lines 1-25).

It would have been obvious to one skilled in the art at the time the invention was made to use the ceramic thermal barrier coating material of Vakil, including the cerium component, in the process of Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer with the expectation of providing suitable thermal barrier properties, as shown by Vakil for nickel-based superalloy gas turbine engine components.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 9 above, and further in view of Eppler.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach that the ceramic thermal barrier coating is applied by air assisted spraying.

However, Eppler teaches breaking down a ceramic into fine particles and air assisted spraying them onto a substrate (Page 955, Column 3).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer to use the air assisted spray technique suggested by Eppler to provide a desirable ceramic coating on a substrate Eppler teaches air-assisted spraying is known in the art to provide ceramic coatings onto a substrate.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 1 above, and further in view of Demaray.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach polishing in the component prior to applying the thermal barrier coating. Demaray teaches polishing a nickel-based superalloy component prior to application of a thermal barrier layer, in order to achieve a desired surface roughness (Col. 2, line 49-Col. 3, line 5). One skilled in the art would have recognized that such polishing/roughening is conventionally used for enhancing the adhesion of subsequently applied coatings to a metal substrate.

Therefore, it would have been obvious to one skilled in the art to polish the nickel-based superalloy component of Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer, prior to applying the coatings, in order to enhance the bonding of

the coatings to the metal components, since polishing of superalloys prior to coating to enhance coating adhesion is disclosed by Demaray.

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 1 above, and further in view of Rigney et al.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach pre-oxidizing the component prior to applying the thermal barrier coating. Rigney et al. teaches oxidizing a nickel-based superalloy component of a gas turbine engine in order to enhance the bonding between the superalloy and subsequently applied coatings (Col. 1, lines 7-10; Col. 6, lines 15-40).

It would have been an obvious modification, for one skilled in the art, to Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer to oxidize the nickel-based superalloy, in order to enhance the bonding between the superalloy and subsequently applied coatings, as is target by Rigney et al.

16. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 1 above and further in view of Demaray, and Rigney et al.

Nagaraj et al., Klabunde, Kirk-Othmer, Demaray, and Rigney et al. are applied here for the same reasons as given above.

It would have been obvious to one skilled in the art at the time the invention was made to polish and oxidize the nickel-based superalloy component of Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer, prior to applying the coatings, in order to optimize the bonding of the coatings to the metal components, since both polishing and oxidizing of superalloys prior to coating are known to increase coating adhesion as disclosed by Demaray and Rigney et al. Please note that the test of obviousness is not an express suggestion of the claimed invention in any or all references, but rather what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them (*In re Rosselet*, 146 USPQ 183).

17. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and Kirk-Othmer as applied to claim 1 above, and further in view of Tecle.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach of providing a reflective-coating mixture with a noble metal encapsulator. Tecle teaches of a method for forming a palladium, silver, gold or platinum in an organic carrier (Column 3, lines 25-35). Tecle discloses utilizing an encapsulant material to limit the required amount of solvent (Column 4, lines 59-67). Tecle utilizes a metallic

colloidal solution with fluxing agents to coat ceramics, metals, and ceramic/metal composites (Column 7, lines 10-31).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer to use a solution containing a metal encapsulant and fluxing agent as taught by Tecle to provide a desirable metallic coating because Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer teaches using a metallic pigment in an organic solvent for coating a surface and Tecle teaches a metal encapsulant reduces the large amount of solvent required when coating a ceramic or metal substrate and fluxing agents are provide enhanced adherence of a coating to a substrate.

18. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer as applied to claim 1 above, and further in view of Akechi.

Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer does not teach a reflective coating mixture containing a glass or ceramic comprising up to 25 wt% of the reflective mixture. Akechi teaches of using glass frit and noble metal dispersion in an organic vehicle to from a coating (Abstract). Akechi discloses using 1-3 wt % glass frit and 37-59 wt % noble metal powder in a 40-60 wt % organic vehicle (abstract). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the range

as disclosed by the reference were selected because overlapping ranges have been held to be prima facie case of obviousness. See In re Wortheim 191 USPQ 90.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Nagaraj et al. in view of Klabunde and further in view of Kirk-Othmer to use the glass frit/noble metal in an organic vehicle taught by Akechi to provide a desirable noble metal coating which experiences no deformation when coating.

19. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaraj et al. in view of Klabunde, Kirk-Othmer, Demaray, Rigney et al., and Eppler.

Nagaraj et al., Klabunde, Kirk-Othmer, Demaray, Rigney et al., Eppler are applied here for the same reasons as given above.

It would have been obvious to one skilled in the art at the time the invention was made to modify Nagaraj et al. by incorporating spraying as taught by Klabunde and particularly air-assisted spraying as taught by Kirk-Othmer for turbine engine components, and further incorporate polishing and oxidizing to improve coating adhesion as taught by Demaray and Rigney et al. and to air assist spray the ceramic layer as taught by Eppler because the combination of the references provides known and conventional steps in coating a turbine component to maximize properties and coating adhesion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER